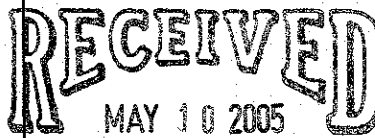


Waste Site Reclassification Form

Date Submitted: FEB 2/23/05 Originator: D. D. Teel/L. A. Dietz Phone: 372-9633/ 372-9378	Operable Unit(s): None Waste Site ID: 600-235 Type of Reclassification Action: Rejected <input type="checkbox"/> Closed Out <input type="checkbox"/> Interim Closed Out <input type="checkbox"/> No Action <input checked="" type="checkbox"/>	Control Number: 2001-091 Lead Agency: EPA <div style="text-align: center;">  MAY 10 2005 EDMC </div>
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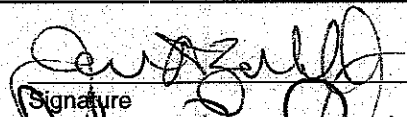
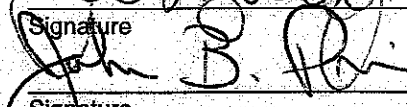
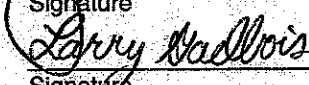
This form documents agreement among the parties listed below authorizing classification of the subject unit as rejected, closed out, interim closed out, or no action and authorizing backfill of the site, if appropriate. Final removal from the National Priorities List of no action, interim closed out, or closed-out sites will occur at a future date.

Description of current waste site condition:

The 600-235 site, Lead Sheathed Telephone Cables, includes lead-sheathed telephone cable that was installed from the 1940s to the mid-1950s and abandoned as part of the installation of the Integrated Voice Data Telephone System (IVDTS). This system installed new telephone equipment in most buildings and installed new telephone switching facilities and underground cable across the site. In some cases the IVDTS reused portions of the old cables, but in most cases the old cable was abandoned in place. An estimated 204 km (127 mi) of buried (at a depth of about 2 to 3 feet), lead-sheathed telephone communications cable has been left in place at the Hanford Site.

Basis for reclassification:

The 600-235 site, Lead Sheathed Telephone Cables was sampled on September 8, 16, and 29, 2004 in accordance with *Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable* (BHI 2004b). Samples of soil below the cable were collected. The evaluation of the sample results support a reclassification decision of the 600-235 site to no action in accordance with the waste site reclassification guideline TPA-MP-14 process (DOE-RL 1998b). The sampling results show that the buried lead-sheathed cable does not present a risk to human health or the environment relative to the cleanup levels and that current site conditions are consistent with the remedial action objectives and the corresponding remedial action goals (RAGS) for remedial action in the Hanford Site 100 Area (DOE-RL 2004b). Additionally, the concentrations of metals in the soil associated with the lead-sheathed cable are consistent with or below Hanford Site background and upstream Columbia River levels. A notation will be included in the WIDS entry that the cable contains lead and will require management as a dangerous waste if removed at a future date as part of excavation or construction activities. The basis for reclassification is described in detail in the *Report for the 600-235 Lead-Sheathed Telecommunications Cable Sampling* (attached).

J. H. Zeisloft DOE-RL Project Lead	 Signature	2/23/04 Date
J. B. Price Ecology Project Manager	 Signature	3/9/05 Date
L. E. Gadbois EPA Project Manager	 Signature	Feb 28 2005 Date

**REPORT FOR THE 600-235, LEAD-SHEATHED TELECOMMUNICATIONS
CABLE SAMPLING**

Attachment to Waste Site Reclassification Form 2001-091

January 2005

REPORT FOR THE 600-235, LEAD-SHEATHED TELECOMMUNICATIONS CABLE SAMPLING

EXECUTIVE SUMMARY

Approximately 204 km (127 mi) of buried, lead-sheathed telecommunications cable has been left in place at the Hanford Site. Of concern is the disposition of this cable (Waste Information Data System [WIDS] site 600-235, Lead Sheathed Telephone Cables), and in particular, whether the lead present in the buried cable poses a risk to human health or the environment if left in place.

On September 15, 2003, representatives of the U.S. Department of Energy, Richland Operations Office (RL), the U.S. Environmental Protection Agency (EPA), and the Environmental Restoration Contractor (ERC) performed a field inspection at several buried lead-sheathed cable locations. Six candidate sites representing a variety of environmental conditions were selected for sampling to determine if releases of lead to the soil surrounding the lead-sheathed cable have occurred at levels that pose a risk to human health or the environment.

Sampling was performed on September 8, 16, and 29, 2004 to evaluate the soil surrounding the lead cable (BHI 2004b). The sampling results were used to support a decision regarding reclassifying the 600-235 site in accordance with the waste site reclassification guideline TPA-MP-14 process (DOE-RL 1998b). The sampling results show that the buried lead-sheathed cable does not present a risk to human health or the environment and that current site conditions are consistent with remedial action objectives and the corresponding remedial action goals (RAGs) for remedial action occurring in the Hanford Site 100 Area (DOE-RL 2004). The concentrations of metals detected in the soil associated with the lead-sheathed cable are also below or consistent with Hanford Site background and upstream Columbia River levels.

REPORT FOR THE 600-235, LEAD-SHEATHED TELECOMMUNICATIONS CABLE SAMPLING

STATEMENT OF PROTECTIVENESS

The sampling results for the 600-235 site (Lead-Sheathed Telecommunications Cable) show that the buried lead-sheathed cable does not present a risk to human health or the environment and that current site conditions are consistent with remedial action objectives and the corresponding remedial action goals for remedial action occurring in the Hanford Site 100 Area (DOE-RL 2004). The concentrations of metals detected in the soil associated with the lead-sheathed cable are also below or consistent with Hanford Site background and upstream Columbia River levels.

GENERAL SITE INFORMATION AND BACKGROUND

Buried lead-sheathed cable was commonly used in telecommunications cable throughout the United States in the 1940s and 1950s. Approximately 204 km (127 mi) of buried, lead-sheathed telephone communications cable has been left in place at the Hanford Site. Of concern is the disposition of this cable (WIDS site 600-235) and whether the lead present in the buried cable poses a risk to human health or the environment if left in place.

A background information summary for the telecommunications cable at the Hanford Site was compiled as part of a literature review (Sharpe 2003) and is provided below.

Pre-Hanford Telephone Systems

Five pre-Hanford telephone franchises were in operation prior to government control of the site in 1943. When the federal government gained control of the area for the Hanford Site, the existing telephone lines of the Columbia River Telephone Company were acquired in their entirety. The government (EID 1944) also acquired segments of the Kennewick Valley Telephone Company that served the Richland area. The acquired telephone lines were used for temporary construction purposes until permanent lines could be installed. Information is not available to determine if the lines were originally above ground and then removed once permanent lines were installed. Personnel from Lockheed Martin Hanford, Inc. believe that the pre-Hanford cable was probably not lead-sheathed and consisted of two individual strands of wire mounted on poles.

Manhattan Project Telephone Systems

The initial telephone system designed for the Hanford project consisted of five general types of aerial or underground cables that included the following:

1. **Inter-Area System** – Lead-sheathed aerial cable lines ran from the 702 Central Telephone Exchange Building at Richland to switchboards housed in the 1720 Patrol Headquarters in the 100-B, 100-D, and 100-F sites; to the 704 Supervisor's Office Buildings in the 200 East

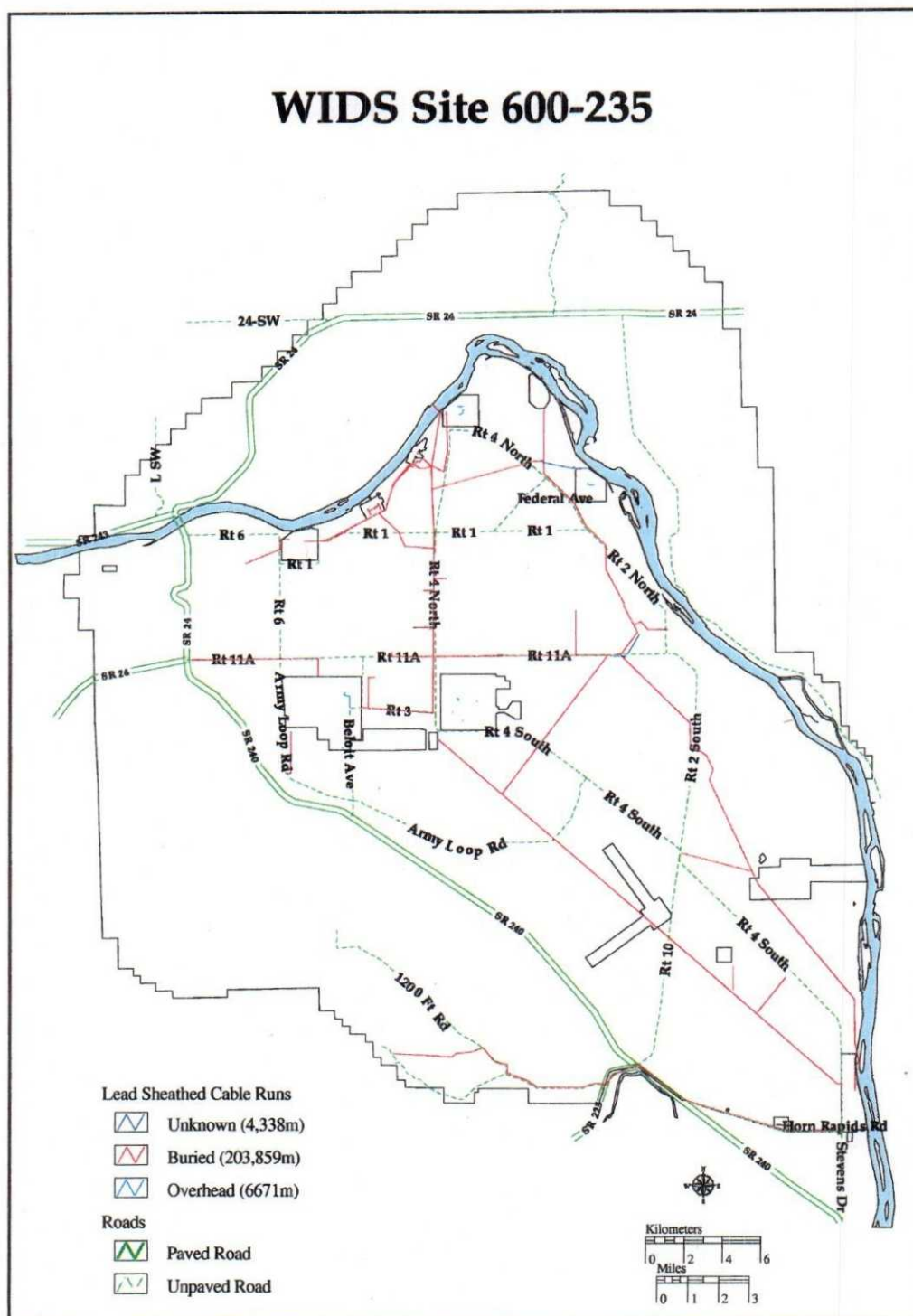
and 200 West Areas; and to Building 3706 in the 300 Areas, with interconnecting trunk lines between the 100 and 200 process areas.

2. **Power Dispatcher System** – A single-circuit, open-wire line (partially carried in the inter-area aerial cable trunk lines) to provide communication in the event of an emergency.
3. **Railroad Dispatcher System** – A single-circuit, open-iron^[sic] wire line (partially carried in the inter-area aerial cable trunk system) connecting each of the railroad dispatcher stations with the chief dispatcher located at the Riverland Classification Yard.
4. **Area Systems** – An aerial cable or multi-circuit line connecting from the respective area switchboards and directly servicing buildings in that area.
5. **Intercommunications Systems** – An individual building system or an intercommunication self-ringing system between several area buildings.

Telephone cables installed during the 1940s were designed with a numbering system indicative of the wire gauge size and number of wire pairs in the cable. For example, in 3-24, the first number (3) represented the number of wire pairs, and the second number (24) represented the wire gauge. Gauge size included 26, 24, 22, and 19. The number of wire pairs associated with the gauge determined the outside diameter weight of the wire.

Historical research located the telephone route information from Hanford construction drawing H-5-465 (GE 1965). The drawing, approved for design in 1949 and revised in 1966, provided information on aerial and underground telephone cable routes.

Lead-sheathed telecommunications cable continued to be installed at the Hanford Site until the mid-1950s when polyethylene-sheathed, plastic-insulated cables were introduced. When necessary, lead-sheathed cables were removed or replaced with polyethylene cables; however, it is unknown if this applies to aerial or underground cables. Lead-sheathed cables were generally buried to a depth of 61 to 91 cm (24 to 36 in.). Documentation indicates that 2,696.4 m (8,846 ft) of aerial cable was removed from the 100-B/C and 100-D Areas, and 2,035 m (6,673 ft) was removed from the 100-H and 100-F Areas. Information on other cable removal actions is not available. Currently, some of the cable is being used in the 100-K and 100-N Areas. Prior to 1993, General Electric Telephone Northwest abandoned about 483 km (300 mi) of telephone cable on the Hanford Site; about 50% of this total was buried. Figure 1 provides a map showing the location of buried and overhead lead-sheathed cable runs, as provided by Lockheed Martin Hanford, Inc. An estimated 7.4 km (4 mi) of the lines shown are aerial, about 4.8 m (3 mi) are unknown, and the rest (204.4 km [127 mi]) are buried.

Figure 1. Map of Lead-Sheathed Telecommunications Cable.

Field Inspections

Information gathered during 2004 field inspections of the lead-sheathed cable provided an opportunity to evaluate the cable to support the development of a sampling design. On September 15, 2003, representatives of the EPA, the RL, and the ERC performed a field inspection of the cable at locations near the 100-F, 100-H, 100-D, and 100-N Areas. On November 24, 2003, the ERC inspected the cable where it crosses under the Columbia River and continues on to the North Slope. During this inspection, it was noticed that four to five cables run under the Columbia River. The cable was found exposed on the northeast side of Route 4, approximately 3.2 km (2 mi) southeast of the 200 East Area, during a subsequent inspection on December 18, 2004. Field observations of the cable resulted in the development of an interpretation of the characteristics and properties of the cable supporting development of the sampling design. Photographs of the cable at a variety of locations and in various conditions are provided in Appendix B.

Description of the Cable

The cable consists of a varying number of inner copper wire strands, individually wrapped in an extremely thin paper, with a very thin twine used as a void filler. The group of copper wires is then wrapped in the lead sheathing. Figure B-1 shows a cut end of the telecommunications cable at the south side of the Columbia River, near the location where the cable crosses under the river. An insulating material consisting of a rope/twine wrap covers the lead and is coated with an asphalt material. Surrounding the outside of the insulation are metal wires (appearing to be galvanized steel) that are spirally wrapped around the cable to protect it. This outer metal wire wrapping is found only on the telecommunications cable that crosses under the river. It was likely used to protect the cable and assist in stretching it across the river. The photograph in Figure B-2 was taken on the north shore of the Columbia River and shows the lead sheath, the twine/asphalt-coated insulation, and the outer metal wire wrap. Some of the scrap cable on the surface of the Columbia River north shore was observed to have an additional twine wrapping on the outside of the metal wire wrap (see Figure B-3).

Near the 100-N and 200 East Areas, and on the north shore of the Columbia River, portions of the telecommunications cable has been exposed at the surface and subjected to extreme weather conditions. At these locations, the asphalt rope/twine insulation appears in a variety of conditions, depending upon the environmental extremes. Figure B-4 at the Columbia River north shore shows the asphalt coating eroded and weathered off the top of the cable, exposing the underlying rope/twine wrap. The bottom of the cable, which is in contact with the soil, is protected from weathering and is less eroded. Figure B-5 shows exposed cable in its least eroded condition, with a paper wrapping that was applied to the asphalt during factory manufacture of the cable, probably to label the cable with the manufacturer's name and specifications.

A metal banding is spirally wrapped around the lead sheath at several locations where the cable is exposed. This metal banding was likely used to protect the lead sheath. Figure B-6 shows this metal banding on the exposed cable at the west end of the 100-N Area. The asphalt-coated twine has been eroded or physically removed from the cable. The cable is also exposed at the surface, approximately 32 km (2 mi) southwest of the 200 East Area, on the north side of Route 4. The

abrasive effect of blowing sand has removed the asphalt-coated twine and exposed the metal wrap. However, the asphalt coating is intact underneath the cable where it is in contact with the soil, but is easily friable and removable from the metal banding.

Small concrete block buildings that appear to have been used to support the telecommunication system are located on the north and south shores of the Columbia River, where the telecommunications cables cross under the river. Figure B-7 shows the building on the south shore above the river at the 100-D Area, and Figure B-8 shows the building located on the north shore above the river. The cables are buried as they approach these buildings and cannot be readily observed; therefore, it is unknown whether the cables enter the buildings.

Previous Investigations

No sampling related to the lead-sheathed cable at the Hanford Site had been performed prior to this sampling effort. However, buried lead-sheathed telecommunications cable at the Idaho National Engineering Laboratory (INEL) was evaluated using soil sampling data, and in 1993 INEL and the EPA determined that the cable posed no unacceptable human health or environmental risk (INEL 1993).

SAMPLING OBJECTIVES

On September 15, 2003, representatives of the DOE, the EPA, and the ERC performed a field inspection at several locations where buried lead-sheathed cable is present. Sampling locations were selected based on locations that were readily identified in the field and representative of a variety of environmental conditions. Subsequent field inspections revealed the presence of the cable in the flood plain area on the North Slope, and in a location where the cable has been exposed in a sand dune southeast of the 200 Area.

The objectives of the sampling were to accomplish the following:

1. Determine if the asphalt insulation material associated with the lead telecommunications cable contains hazardous materials (e.g., PCBs, PAHs, asbestos) that present a risk in their current state, and support disposition of any cable that may be removed as part of future excavation or construction activities. Also determine if any hazardous constituents present in the asphalt material should be added to the soil sample analyses.
2. Determine if releases of lead to the soil surrounding the lead-sheathed cable have occurred.
3. Determine if the soil surrounding the lead-sheathed cable contains levels of lead that would pose a risk to human health and the environment.
4. Determine if the copper wire paper insulating material contains asbestos and polychlorinated biphenyls (PCBs) in order to support disposition of any cable that may be removed as part of future excavations or construction activities.

To achieve these objectives, six sample locations, representing a variety of environmental conditions, were selected by the DOE and EPA for sampling:

1. Buried cable on the bluff northwest of the 100-D Area at the location where the cable crosses the Columbia River (Figure 2).
2. Exposed cable northwest of the 100-D Area in the riparian zone where the cable crosses under the Columbia River (Figure 2).
3. Buried cable located southwest of the 100-N Area at the west end of the 100-N-19 construction debris disposal dump site (Figure 3).
4. Buried cable located approximately 3.2 km (2 mi) southeast of the 200 East Area on the north side of Route 4 (Figure 4).
5. Buried cable located in the floodplain on the north side of the Columbia River (Figure 5).
6. Buried cable on the bluff above the floodplain on the north side of the Columbia River (Figure 5).

Contaminants of Concern

The results from field inspections and process knowledge identified the following constituents as contaminants of concern (COCs) and potential contaminants of concern (COPCs):

- Lead-sheathed cable – COC is elemental lead
- Asphalt insulating material – COPCs include asbestos, PCBs, metals, and polycyclic aromatic hydrocarbons (PAHs) associated with the asphalt
- Paper insulation on copper wires – COPCs include asbestos and PCBs.

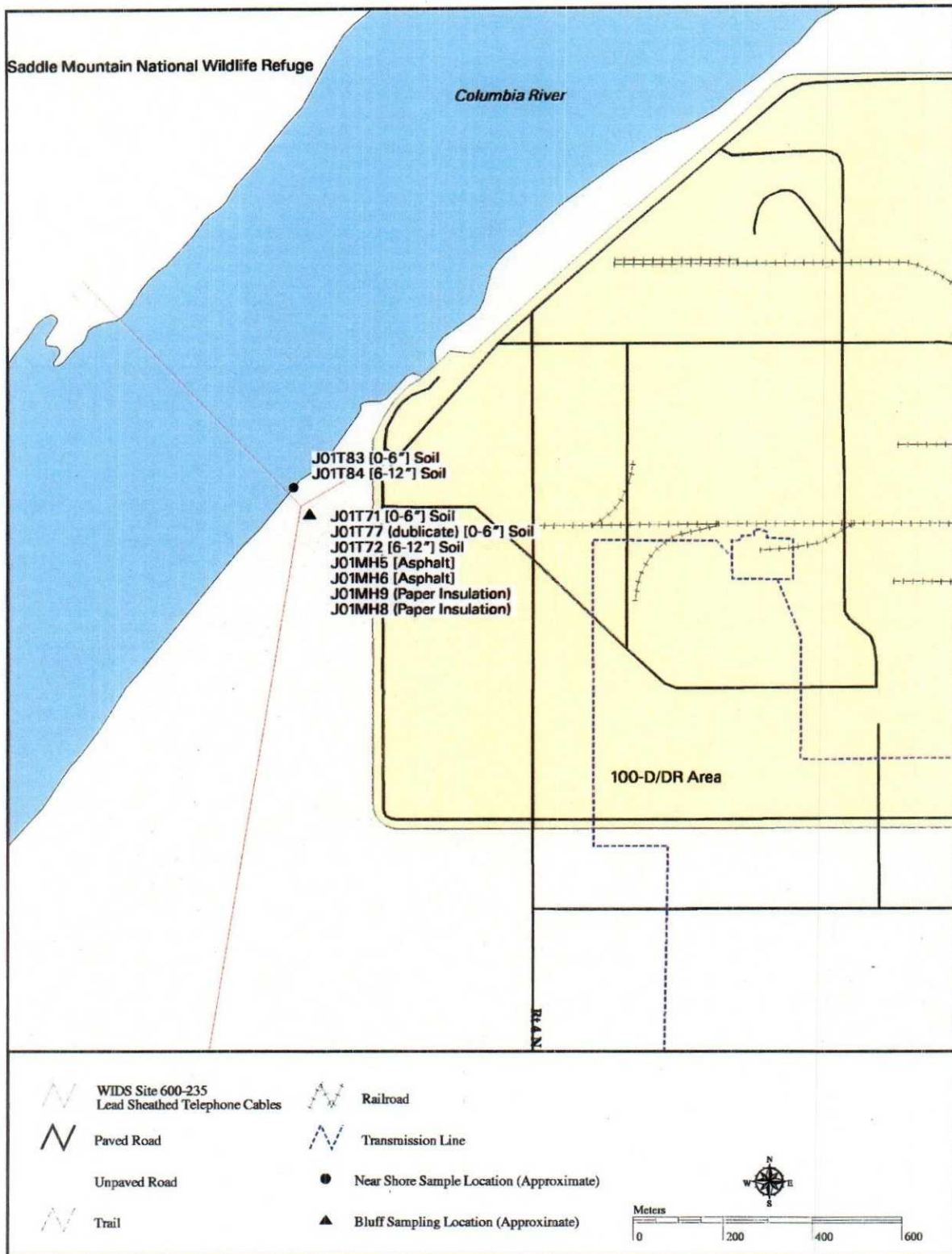
Figure 2. Sample Location Near the 100-D/DR Area.

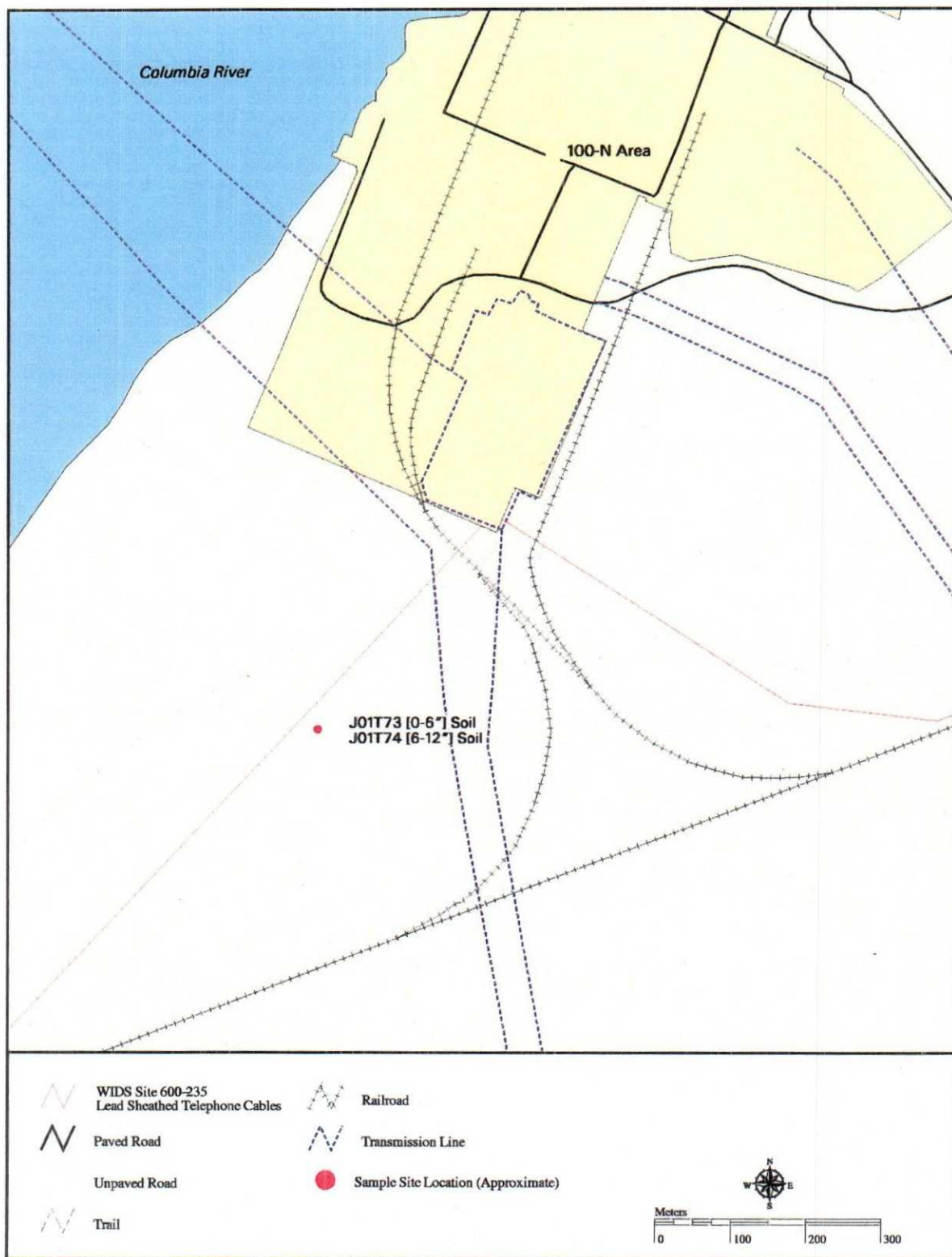
Figure 3. Sample Location Near the 100-N Area.

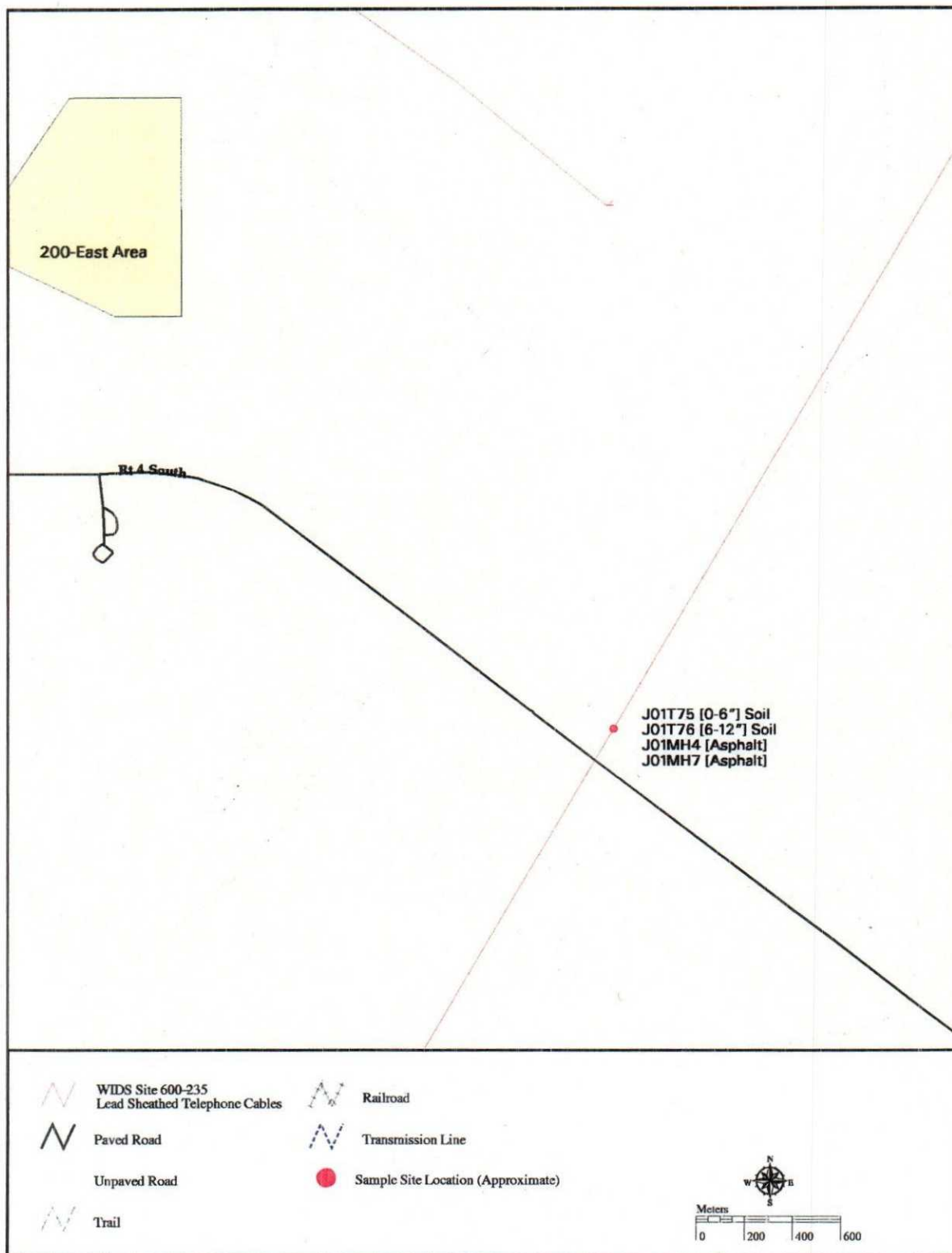
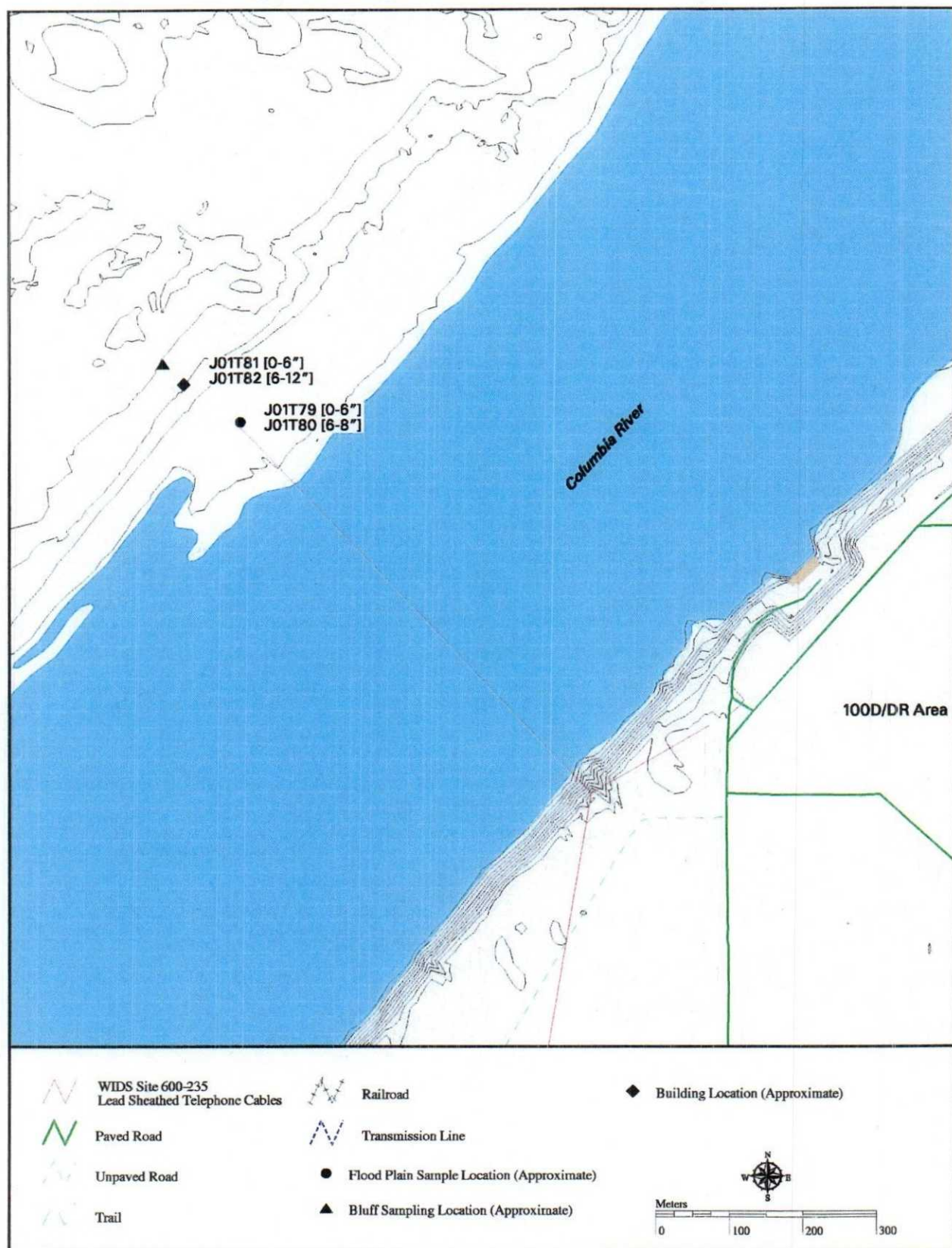
Figure 4. Sample Location Near the 200 East Area.

Figure 5. Sample Locations on the North Slope.

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SAMPLE COLLECTION AND ANALYSIS METHODS

The sampling design for evaluation of the lead-sheathed cable was developed using the procedural and quality requirements specified in:

- DOE O 414.1B, *Quality Assurance*
- *Requirements for Quality Assurance Project Plans* (EPA 2001)
- *Hanford Analytical Services Quality Assurance Requirements Document* (HASQARD) (DOE-RL 1998a).

Sample collection and analysis were performed in accordance with requirements specified in the *Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable* (BHI 2004b) and procedures described in BHI-EE-01, *Environmental Investigation Procedures*.

One sample of the inner copper wire paper insulation, 2 samples of the asphalt insulating material, and 12 soil samples were collected for laboratory analysis. In addition, one duplicate soil sample and an equipment blank sample were collected. A summary of the samples that were collected and the laboratory analyses performed is described below.

Sample Collection

Lead Cable Sampling. At many locations, the lead-sheathed cable is wrapped in insulating material, then covered by either a metal banding or steel cable wrap. The insulating material appears to be made of an asphalt-type coating that is applied over a twine or rope wrapping. The insulating material, consisting of the combined twine/rope and the asphalt, was sampled to evaluate for hazardous constituents. Additionally, the paper insulating material that covers the inner copper wires was also sampled to evaluate for hazardous constituents.

An approximate 1.8-m (6-ft) length of cut lead cable was located on the ground approximately 91.4 m (100 yd) northeast of the small concrete building at the 100-D Bluff area. This length of cable is fabricated as shown in Figure B-1. The galvanized metal wire wrap was removed in the field to expose the asphalt-twine coating. A utility knife was used to cut pieces of the asphalt-twine away from the inner lead cable. Both layers were cut from the cable and combined into one sample of asphalt for laboratory analysis. The remaining asphalt (approximately 10 ounces) was removed from the 1.8-m (6-ft) length of cable and placed in a separate plastic bag for waste disposition. The 1.8-m (6-ft) length of cable was then coiled and placed in a plastic bag for shipment to the primary offsite laboratory for analysis. Upon receipt, the laboratory removed the inner copper wire insulation material and prepared a sample for PCB analysis. They also prepared a subsample for shipment to a second laboratory for asbestos analysis. Table 1 provides a summary of the samples collected and the requested laboratory analyses. A second sample of the asphalt coating was collected at a location near the 200 East Area, where the cable is exposed in a sand dune.

Table 1. Sampling Summary.

Location	Sample Type	Sample #	Depth ^a	Sample Analyses
Copper Wire Insulating Material				
100-D	Paper	J01MH8	N/A	PCBs
		J01MH9	N/A	Asbestos
Asphalt Insulating Material				
200 East	Asphalt	J01MH5	N/A	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, SVOAs, PCBs
		J01MH7	N/A	Asbestos
100-D	Asphalt	J01MH4	N/A	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, SVOAs, PCBs
		J01MH6	N/A	Asbestos
Soil Samples				
200 East	Soil	J01T75	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
	Soil	J01T76	6 to 12 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
100-N	Soil	J01T73	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
	Soil	J01T74	6 to 12 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
100-D Bluff	Soil	J01T71	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
	Soil	J01T72	6 to 12 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
100-D Riparian	Soil	J01T83	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
	Soil	J01T84	6 to 12 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
North Slope Bluff	Soil	J01T81	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
	Soil	J01T82	6 to 12 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
North Slope Floodplain	Soil	J01T72	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
	Soil	J01T80	6 to 8 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
Additional Quality Control Samples				
N/A	Equipment Blank	J01T78	N/A	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs
Duplicate 100-D Bluff	Soil	J01T77	0 to 6 in.	Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, PCBs

^a Field estimate of approximate sample depth in feet below grade.

N/A = not applicable

PAH = polycyclic aromatic hydrocarbon

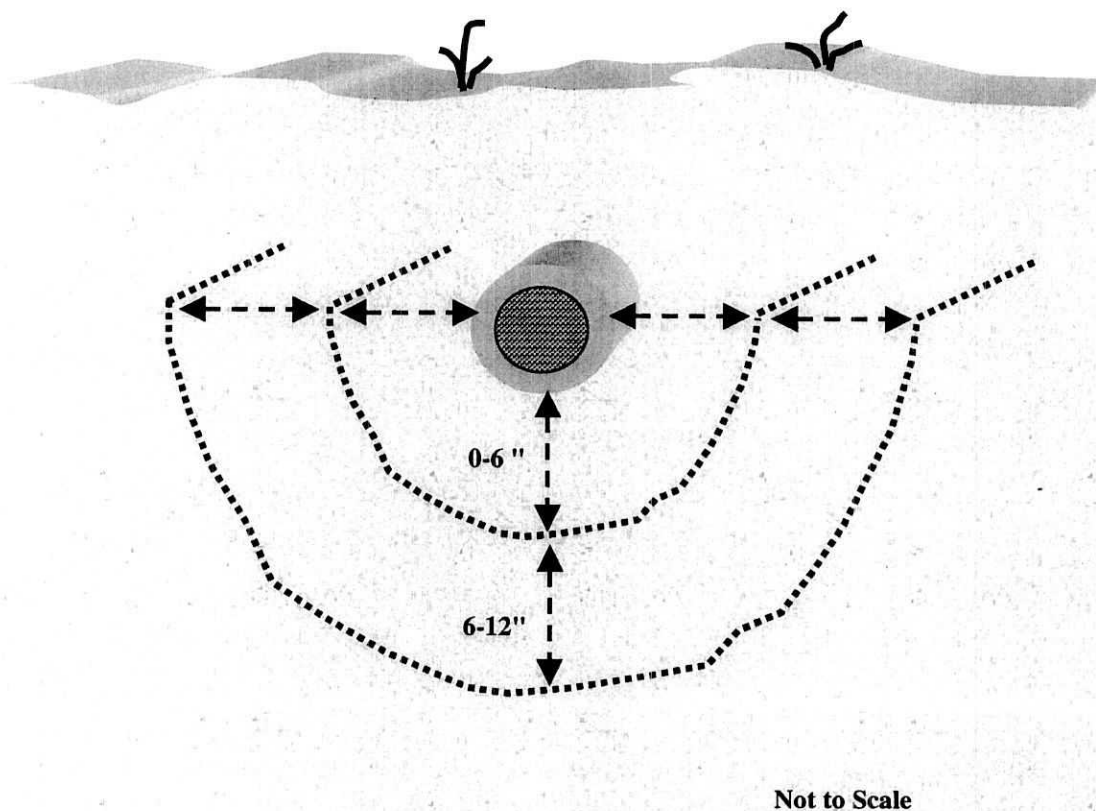
PCB = polychlorinated biphenyl

SVOA = semi-volatile organic analysis

Soil Sampling. Prior to soil sampling, the results of the laboratory analyses of the asphalt-insulating material sample and the copper wire paper insulating material were evaluated to determine whether any hazardous constituents were detected that should be included in the soil sample analyses. Polycyclic aromatic hydrocarbons were detected in the asphalt samples and, therefore, were added to the soil sample analysis. Polychlorinated biphenyls were added to the soil sample analysis because detection limits for the asphalt samples were higher than desired due to matrix interference. No asbestos was found in the asphalt or the paper insulating material, and therefore soil samples were not analyzed for asbestos.

To assess the potential leaching of the lead-sheathed cable into the adjacent soil, samples were collected in the vicinity of the cable at each of the 6 locations. Two soil horizons were sampled at each location – one immediately beneath/adjacent to the cable to a depth of 15.2 cm (6 in.), and a second from a depth of 15.2 to 30.5 cm (6 to 12 in.) beneath the cable. Figure 6 is a cross-section schematic of the soil sampling strategy. For each cross-section soil horizon, a length of cable was exposed so that sufficient soil could be collected to provide for the required sample analyses. Each soil sample horizon was combined along the length of the cable into one sample for analysis of arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, PAHs, and PCBs, for a total of two soil samples at each location (i.e., one sample from each horizon).

Figure 6. Soil Sampling Cross-Section.



Sample Analytical Methods

The analytical methods and practical quantitation limits (PQLs) for sample analysis are provided in Table 2.

Table 2. Summary of Analytical Requirements. (2 Pages)

Analyte	Analytical Method	Practical Quantitation Limit
<i>Asphalt Insulating Material</i>		
Arsenic	SW-846, Method 6010	10 mg/kg
Barium		2 mg/kg
Cadmium		0.5 mg/kg
Chromium		1 mg/kg
Lead		5 mg/kg
Selenium		1 mg/kg
Silver		0.2 mg/kg
Mercury	SW-846, Method 7471	0.2 mg/kg
Polycyclic aromatic hydrocarbons	SW-846, Method 8270	Various
PCBs	SW-846, Method 8082	0.02 mg/kg
Asbestos	PLM	Trace
<i>Copper Wire Paper Insulating Material</i>		
PCBs	SW-846, Method 8082	200 mg/kg ^a
Asbestos	PLM	Trace
<i>Soil</i>		
Arsenic	SW-846, Method 6010	10 mg/kg
Barium		2 mg/kg
Cadmium		0.5 mg/kg
Chromium		1 mg/kg
Lead		5 mg/kg
Selenium		1 mg/kg
Silver		0.2 mg/kg

Table 2. Summary of Analytical Requirements. (2 Pages)

Analyte	Analytical Method	Practical Quantitation Limit
Mercury	SW-846, Method 7471	0.2 mg/kg
Polycyclic aromatic hydrocarbons	SW-846, Method 8310	Various
PCBs	SW-846, Method 8082	0.02 mg/kg

^a Due to the difficulty of collecting sufficient sample volume (30 g) for achieving a 0.02 mg/kg detection limit, it was agreed with the U.S. Environmental Protection Agency to collect a smaller volume (about 1/3 gram) to analyze for PCBs with a resulting higher detection limit of 200 mg/kg.

PCB = polychlorinated biphenyl

PLM = polarized light microscopy

SAMPLE RESULTS AND DISCUSSION

All sampling was performed in September 2004, as specified in the sampling and analysis plan (BHI 2004b). Observations recorded in field logbooks (BHI 2004a) and analytical results (Appendix C) from sampling at each location were evaluated and are summarized below.

Copper Wire Paper Insulating Material

Laboratory analysis of the copper wire paper insulating material sample did not detect PCBs or asbestos. As provided in the sampling and analysis plan (BHI 2004b), an agreement with the EPA allowed for a higher laboratory detection limit of 200 mg/kg for PCBs in this sample, due to the difficulty in collecting sufficient sample volume to perform the required analysis. Regardless of the small sample volume, the laboratory was able to perform the analysis with a PQL of 0.17 mg/kg and no PCBs were detected. The sample results for asbestos and PCBs are provided in Tables C-2 and C-3, respectively.

Asphalt Insulating Material

Two samples of asphalt insulating material were collected and submitted for laboratory analysis. No asbestos or PCBs were found in the samples. Because of matrix interference associated with the asphalt, the PQL for the PCB analytical method was 0.21 mg/kg instead of 0.02 mg/kg. Regardless, the data supports that the asphalt material does not contain PCBs.

The asphalt samples were difficult matrices for laboratory analysis, and both samples required dilutions in order to perform the PAH analysis. In addition, upon receipt at the laboratory, a recommendation was made by the laboratory to perform the analysis using Method 8270 instead of Method 8310 for the asphalt because of the considerable interference and dilutions that were necessary. The results of the sample analysis were provided as estimates because of the nature of the sample media and indicate the presence of PAHs in the asphalt including anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, benzo(b)fluoranthene, carbazole, chrysene, dibenz[a,h]anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene. The presence of these constituents is consistent with those found in typical asphalt formulations.

Arsenic, barium, cadmium, chromium, lead, mercury, and selenium were detected at low concentrations in the asphalt samples. However, the asphalt sample collected at the 100-D location contained 1,060 mg/kg of lead, likely because of the adherence of the lead to the overlying asphalt coating that was removed from the lead sheathing.

Soil

Analytical results for the soil samples are included in Appendix C. Table C-1 provides the inorganic sample results, and Table C-4 provides the results for PCB and PAH analysis. For comparison purposes, Table 3 provides the 100 Area RAGs specified in *Remedial Design Report/Remedial Action Work Plan for the 100 Areas* (DOE-RL, 2004), the ecological indicator soil concentrations for screening specified in WAC 173-340-7490, and the soil sampling results.

Organics. No PCBs were detected in any of the soil samples. No PAHs were detected above WAC 173-340-740 Method B cleanup levels in any of the samples, with the exception of a single sample collected from the 0- to 15.2-cm (0- to 6-in.) soil horizon at the floodplain location on the north slope. The presence of PAHs in this sample is due to difficulty preventing cross-contamination during field sample collection. The soil in the floodplain consists predominantly of a gravel-to-boulder matrix, with a limited amount of sand and silt in the interstices that was extremely difficult to hand dig. As a result, hand digging at this location could not keep the hole adequately open to collect a representative sample and prevent the asphalt coating the lead cable from visibly flaking off into the soil sample. Additionally, the lower sample horizon could only be collected from 15.2 to 20.3 cm (6 to 8 in.) because of the difficulty in hand digging. However, the concentration of PAHs below 15.2 cm (6 in.) is significantly below Method B cleanup criteria.

Metals. Mercury, selenium, and silver were not detected above the laboratory PQLs in any of the soil samples. Arsenic was detected at concentrations ranging from 1.7 mg/kg to 6.9 mg/kg, below the WAC 173-340-740(2) (Ecology 1996) Method A cleanup level of 20 mg/kg. Barium was detected at concentrations ranging from 56.6 mg/kg to 91.6 mg/kg, below the Hanford Site background concentration of 132 mg/kg (DOE-RL 1998a). Cadmium was detected in five soil samples ranging from 0.2 mg/kg to 0.83 mg/kg. Only one sample slightly exceeded the statewide background concentration of 0.81 mg/kg. This sample was collected at the North Slope floodplain location in the 0- to 15.2-cm (0- to 6-in.) sample horizon. Chromium was detected in concentrations ranging from 4.0 mg/kg to 46.6 mg/kg. Two samples exceeded the Hanford Site background concentration of 18.5 mg/kg. These samples were collected at the 0- to 15.2-cm (0- to 6-in.) and 15.2- to 20.3-cm (6- to 8-in.) horizons at the North Slope floodplain location. Lead was detected in concentrations ranging from 2.4 mg/kg to 34.2 mg/kg. Three samples exceeded the Hanford Site background concentration of 10.2 mg/kg. Two of the samples were from the North Slope floodplain location, and one was collected from the riparian zone at the 100-D sampling location.

In all cases, concentrations of metals in the soil samples exceeding background levels are at sampling locations where metal contaminants have been introduced from upstream sources from the Columbia River. Studies of sediment samples collected from the upper Columbia River (EPA 2003) and Lake Roosevelt (Ecology 2001) report high concentrations of metals related to historical mining activities. The dispersion of metals is effected by dams and reservoirs such as

the Grand Coulee Dam as coarser sediments entering the reservoir typically deposit at the head of the reservoir, and finer sediments, such as silt and clay, are deposited near or transport past the dam. When the reservoir is lowered, the accumulated sediments can be scoured and transported downstream (EPA 2003).

In 2001 the Pacific Northwest National Laboratory (PNNL) and the Washington State Department of Health performed a joint study of radiological and chemical contaminants in the soil column, groundwater, and near-shore environment along the Columbia River at the 300 Area. The results of the study are reported in the *Survey of Radiological and Chemical Contaminants in the Near-Shore Environment at the Hanford Site 300 Area* (PNNL 2003). The investigation compared the sampling results to a background sample location near the Vernita Bridge, upstream from the Hanford Site. The concentration of cadmium, chromium, and lead in the sediment sample from near the Vernita Bridge was 0.553 mg/kg, 66.2 mg/kg, and 33.2 mg/kg, respectively. In 2003, the 100 B/C Pilot Project Risk Assessment performed sampling which included collection of a reference background soil sample in the riparian zone at the Vernita Bridge (BHI 2005). The concentration of cadmium, chromium, and lead in this reference sample was 2.01 mg/kg, 55.83 mg/kg, and 61.7 mg/kg, respectively. Figure 8 shows the concentration of cadmium in soil samples collected below the lead-sheathed cable in comparison to the upstream Vernita Bridge samples and the Hanford site background concentrations. Figure 9 shows the concentration of chromium in soil samples collected below the lead-sheathed cable in comparison to the upstream Vernita Bridge samples and the Hanford site background concentrations. Figure 10 shows the concentration of lead in soil samples collected below the lead-sheathed cable in comparison to the upstream Vernita Bridge samples and the Hanford site background concentrations. As shown in the graphs, the concentrations of metals detected in the soil samples associated with the lead-sheathed cable are below or consistent with Hanford site background and upstream Columbia River levels.

DATA QUALITY ASSESSMENT

A data quality assessment (DQA) review was performed to compare the sampling approach and analytical data with the sampling and data requirements specified by the project objectives. This review involves evaluation of the data to determine if it is of the right type, quality, and quantity to support the intended use (i.e., closeout decisions [EPA 2000]). The assessment review completes the data life cycle (i.e., planning, implementation, and assessment) that was initiated by the data process.

This DQA review was performed in accordance with BHI-EE-01, Environmental Investigations Procedures. Specific data quality objectives for the site are found in the *Sampling and Analysis Plan for Evaluation of Buried Lead-Sheathed Telephone Communications Cable* (BHI 2004b). All samples were collected per the sample design. To ensure quality data sets, the validation procedures detailed in BHI-01435 (BHI 2000) for chemical analysis, are followed where appropriate.

For this effort several different types of samples have been collected and analyzed. Any one type of sample may present difficulties unique to that type of sample in the various analytical methods used. Therefore, any deficiencies in the resulting data will be commented on here with respect to the type of sample and analytical method used.

Table 3. Summary of 100 Area Remedial Action Goals and Ecological Indicator Soil Concentrations Compared to Soil Sample Results

CONSTITUENT	100 Area Cleanup Criteria ^a				Ecological Criteria ¹			Soil Sample Locations												
	Hanford Background	Direct Exposure	Groundwater Protection	Protection of Columbia River	Plants	Soil Biota	Wildlife	100-D Bluff (0-6 in.)	100-D Bluff (0-6 in.) Duplicate	100-D Bluff (6-12 in.)	100-D Riparian (0-6 in.)	100-D Riparian (6-12 in.)	100-N (0-6 in.)	100-N (6-12 in.)	200 East (0-6 in.)	200 East (6-12 in.)	North Slope Bluff (0-6 in.)	North Slope Bluff (6-12 in.)	North Slope Floodplain (0-6 in.)	North Slope Floodplain (6-8 in.)
Metals (mg/kg)																				
Arsenic	20 ^b	20 ^b	20 ^b	20 ^b	10 ^m	60 ^m	7 ^m	2.1	2.6	2.0	1.7	2.8	3.4	3.3	2.8	2.9	3.8	2.7	6.9	7.0
Barium	132	5600 ^c	132 ^d	NA ^c	500	NA	102	66.2	66.3	56.6	65.2	63.9	56.8	57.4	88.3	91.6	60.2	66.0	73.6	84.3
Cadmium	0.81 ^f	13.9 ^g	0.81 ^d	0.81 ^d	4	20	14	ND	ND	ND	0.2	0.42	ND	ND	ND	ND	ND	0.48	0.83	0.3
Chromium	18.5	120,000	18.5 ^d	18.5 ^d	42	42	67	4.0	5.3	4.0	6.4	6.7	15.0	14.1	7.6	9.1	10.5	11.4	22.0	46.6
Lead	10.2	353 ^h	10.2 ^d	10.2 ^d	50	500	118	3.0	2.9	2.4	6.4	19.6	4.0	4.1	3.3	3.5	3.8	3.3	34.2	15.0
Mercury	0.33	24 ^c	0.33 ^d	0.33 ^d	0.3	0.1	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	0.78 ^f	400 ^c	5	1	1	70	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	0.73	400 ^c	8	0.73 ^d	2	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Organics (mg/kg)																				
PCBs	NA	0.5 ^e	0.017 ^j	0.017 ^j	40	NA	0.65	0.014	0.014	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	NA	4,800 ^c	96	129	20	NA	NA	ND	ND	ND	ND	ND	0.105	ND	ND	ND	ND	ND	1.2	1.0
Acenaphthylene ^k	NA	4,800 ^c	96	129	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	NA	24,000 ^c	240	1,920	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003	0.003	ND	ND
Benzo(a)anthracene	NA	1.37 ⁱ	0.33 ^j	0.33 ^j	NA	NA	NA	0.007	ND	ND	ND	ND	0.004	ND	ND	ND	0.016	ND	0.79	0.04
Benzo(a)pyrene	NA	0.33 ^j	0.33 ^j	0.33 ^j	NA	NA	12	ND	ND	ND	ND	ND	0.034	0.008	ND	ND	0.011	ND	1.7	0.078
Benzo(b)fluoranthene	NA	1.37 ⁱ	0.33 ^j	0.33 ^j	NA	NA	NA	0.006	ND	ND	0.007	0.004	0.063	0.025	ND	ND	0.028	ND	6.8	0.360
Benzo(g,h,i)perylene ^k	NA	2,400 ^c	48	192	NA	NA	NA	ND	ND	ND	ND	ND	0.029	0.007	ND	ND	0.012	ND	1.7	0.110
Benzo(k)fluoranthene	NA	13.7 ⁱ	0.33 ^j	0.33 ^j	NA	NA	NA	ND	ND	ND	ND	ND	0.009	ND	ND	ND	0.006	ND	1.6	0.084
Chrysene	NA	137 ⁱ	1.2	0.33 ^j	NA	NA	NA	0.006	ND	ND	0.003	ND	ND	ND	ND	ND	0.025	ND	2.0	0.120
Dibenz[a,h]anthracene	NA	0.33 ^j	0.33 ^j	0.33 ^j	NA	NA	NA	ND	ND	ND	ND	ND	0.003	ND	ND	ND	0.005	ND	0.24	ND
Fluoranthene	NA	3,200 ^c	64	18	NA	NA	NA	0.011	ND	ND	ND	0.008	0.049	0.010	ND	ND	0.120	ND	3.5	0.370
Fluorene	NA	3,200 ^c	64	260	NA	30	NA	ND	ND	ND	ND	0.003	0.004	ND	ND	ND	0.005	ND	0.62	0.044
Indeno(1,2,3-cd)pyrene	NA	1.37 ⁱ	0.33 ^j	0.33 ^j	NA	NA	NA	ND	ND	ND	ND	0.002	0.034	0.006	ND	ND	0.009	ND	2.1	0.130
Naphthalene	NA	1,600 ^c	16	1,976	NA	100	5000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	NA	24,000 ^c	240	1,920	NA	NA	NA	ND	ND	ND	0.003	0.003	ND	ND	ND	ND	0.008	0.004	0.2	ND
Pyrene	NA	2,400 ^c	48	192	NA	NA	NA	0.014	ND	ND	ND	ND	0.011	ND	ND	ND	0.065	ND	1.9	0.099

^a 100 Area Cleanup Criteria specified in the Remedial Design Report/Remedial Action Work Plan for the 100 Area (DOE/RL 2004).^b The cleanup value of 20 mg/kg has been agreed to by Tri-Party project managers. The basis for 20 mg/kg is provided in Section 2.1.2.1 of the Remedial Design Report/Remedial Action Work Plan for the 100 Area (DOE/RL 2004).^c Noncarcinogenic cleanup level calculated from WAC 173-340-740B, Method B (Ecology 1996).^d Where cleanup levels are less than background, cleanup levels default to background (WAC 173-340-700[4][d]) (Ecology 1996).^e No cleanup level is available from the Ecology Cleanup Levels and Risk Calculation tables, and no toxicity values are available to calculate cleanup levels.^f Hanford site-specific background not available; not evaluated during background study. Value is from National Background Soil Metals Concentrations in Washington State (Ecology 1994).^g Carcinogenic cleanup level calculated based on the inhalation exposure pathway; WAC 173-340-750(3)m (Ecology 1996).^h WAC 173-340-740(3) value for lead is not available. The cleanup value was calculated using Guidance Manual for the Integrated Exposure Uptake Biokinetics Model for Lead in Children (EPA 1994).ⁱ Carcinogenic cleanup level calculated per WAC 173 340-740(3), Method B (Ecology 1996).^j Where cleanup levels are less than the RDLs, cleanup levels default to the RDLs per WAC-173-340-707(2) (Ecology 1996).^k Toxicity data for this chemical are not available. Cleanup levels are based on surrogate chemicals:

Contaminant: acenaphthylene; surrogate: acenaphthene; Contaminant: benzo(g,h,i)perylene; surrogate: pyrene; Contaminant: phenanthrene; surrogate: anthracene

¹ Ecological indicator soil concentrations deemed to be protective of plants, soil biota, and wildlife identified in Table 749-3 from WAC 173-340-7490 (Ecology 2001). These values represent screening limits. Higher concentrations may be protective.^m Value is most restrictive for arsenic III or arsenic V as specified in Table 749-3 from WAC 173-340-7490 (Ecology 2001).

NA = not available ND = not detected

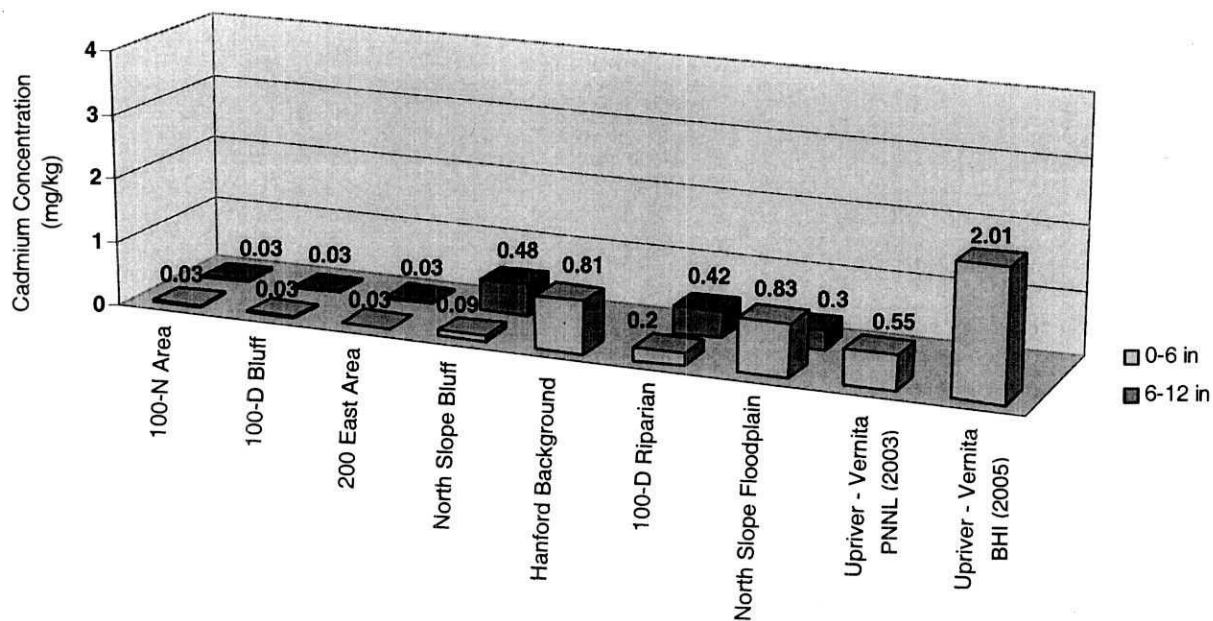
Figure 8. Cadmium Concentrations in Soil.

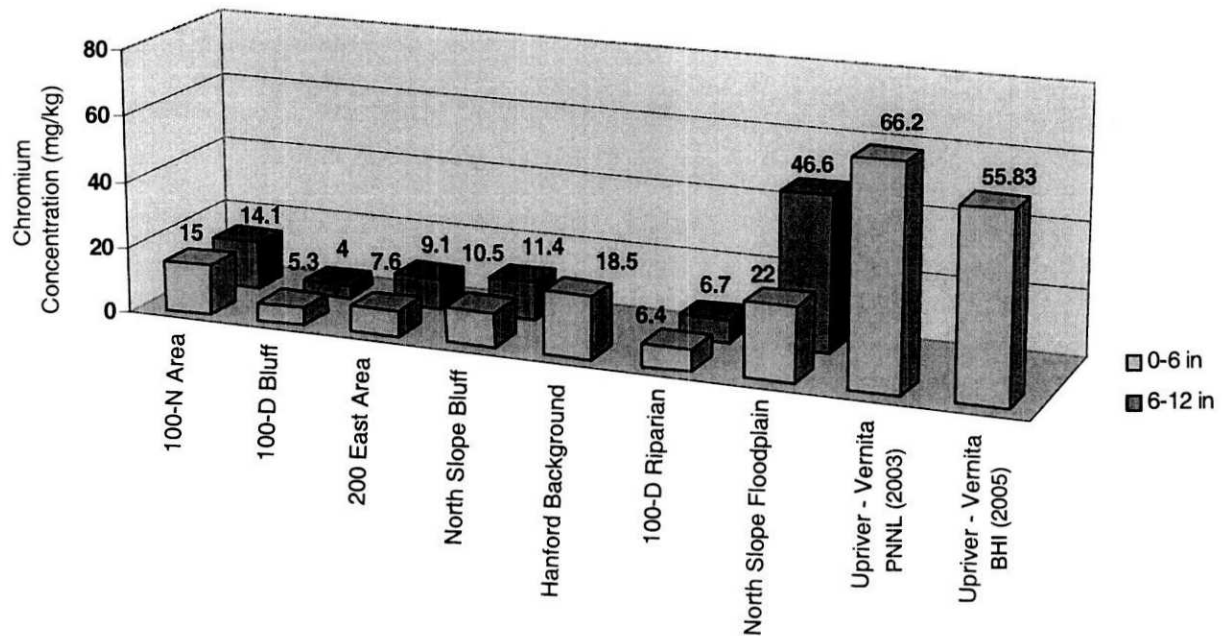
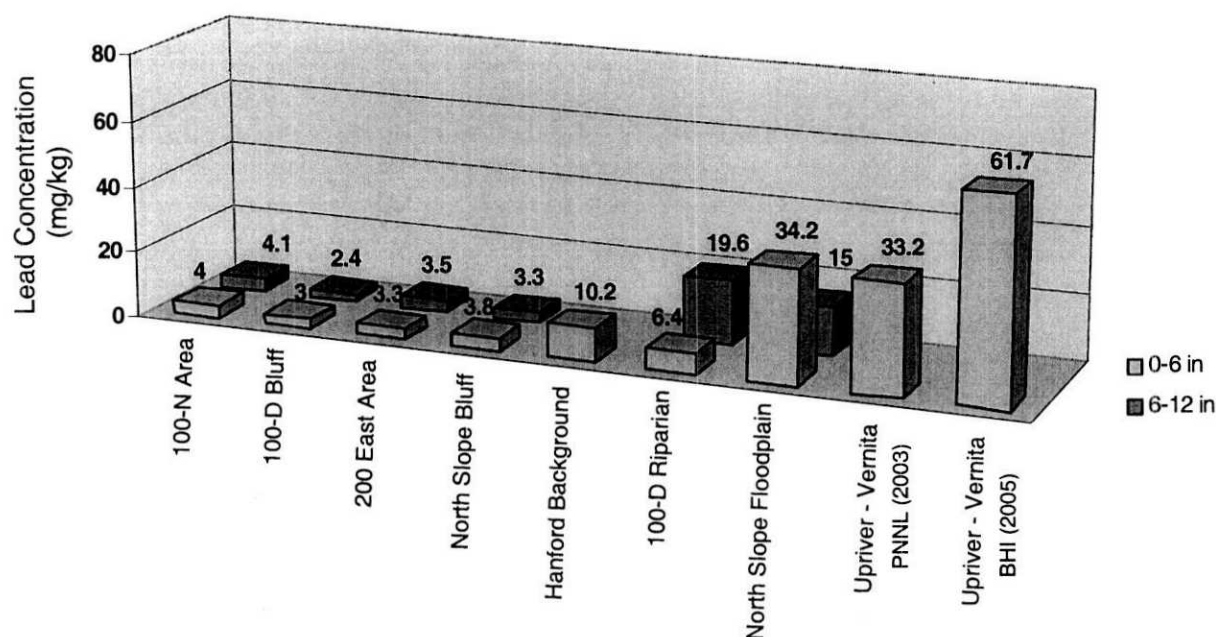
Figure 9. Chromium Concentrations in Soil.

Figure 10. Lead Concentrations in Soil.

Asphalt Coating and Paper Insulation

In SDG H2638, the asphalt coating and some of the paper insulation from inside the cable were analyzed. The asphalt coating resulted in a thick black extract that caused the lab to dilute the sample extracts for the semi-volatile organic analyses (SVOA). For the non-detected analytes, the method detection limits (MDLs) were elevated substantially. All of the diluted samples lost their surrogates to the dilution. In addition, the matrix spike/matrix spike duplicate (MS/MSD) analytes were all diluted out. A high response in the laboratory control sample (LCS) suggests that there may be a bias in the data toward higher concentrations than were in the actual sample. However, the data is useable for decision making purposes.

In the PCB analyses of the asphalt coating and paper insulation, low recoveries were observed in the MS/MSD pair. The lab attributes this to matrix interference. Because all of the recoveries are tightly grouped in the 40-49% range, it is possible that a lab error, where the samples were spiked with ½ of the amount they should have been, was the actual cause. These minor QA/QC deficiencies do not preclude the data from being used for decision-making purposes.

The metal analyses of the asphalt coating required some dilution to offset the nature of the resulting extract. This caused the MDL's to be raised enough that for silver and selenium that they were slightly greater than the RDL's. Other indicators in the data confirmed the heterogeneity present in the matrix of the asphalt coating. This data is useable for decision making purposes.

Soil Samples

Soil samples were collected from several depths and at several locations below the lead-sheathed cable. All of these samples were analyzed for polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and trace metals by inductively coupled plasma (ICP metals). All of this data was sent out for third party validation and while some "J" flags were applied to qualify some of the data as estimated, none of the data was rejected or qualified with an "R" flag.

In the PCB analyses, the lab had some issues with the laboratory control sample (LCS) and some of the surrogates. These problems can be attributed to sample dilutions or lab errors in the spiking. None of these problems invalidate the field sample data for use in the decision making process.

In the PAH analyses some of the surrogates and matrix spikes were lost when some of the sample extracts required dilutions. Some of the remaining matrix spike recoveries suffered from matrix interference that suggested some analytes had a bias toward higher calculated concentrations than the actual concentrations in the samples. These problems could cause some of the data to be considered to be estimated but do not prevent the data from being used for decision making purposes.

The ICP metals analysis is very sensitive to trace levels of metals. So much so that the trace metals in high-grade laboratory solvents or even new glassware are often enough to register on the ICP. These levels are generally below any relevant concentrations for these analytes. In cases where the levels in the method blank are high enough, that they might be relevant to levels in a sample, "J" flags are often added by the validator. This indicates that a specific analyte concentration is considered an estimate. This did in fact occur in the equipment blank in SDG H2730 where 0.16 mg/kg of total chromium was detected and qualified with a "J" flag as an estimate. The associated field samples had high enough total chromium concentrations that the low level in the method blank and equipment blank are not significant to those results.

The ICP metals analysis for the soil samples also had some minor issues stemming from the natural heterogeneity of the soil matrixes and required dilutions of the sample extracts. In some cases, specific analytes in specific samples were qualified as estimates. However, all of the data remains useable for decision making purposes.

Limited, random or sample matrix-specific influenced batch quality control issues such as these are a potential for any analysis. The number and types seen in these data sets were within expectations for the matrix types and analyses performed.

The DQA review for the lead cable sampling effort found the results to be accurate within the standard errors associated with the methods, including sampling and sample handling. The data quality assessment (DQA) review concludes that the data are of the right type, quality, and quantity to support the intended use, except as noted above. Detection limits, precision, accuracy, and sampling data group completeness were assessed to determine if any analytical results should be rejected as a result of quality assurance and quality control deficiencies. All analytical data were found acceptable for decision-making purposes. The sample analytical data

Report for the 600-235 Lead-Sheathed Telecommunications Cable Sampling
January 2005

are stored in the Environmental Restoration (ENRE) project specific database prior to archiving in the Hanford Environmental Information System (HEIS) database and are summarized in Appendix C.

SUMMARY FOR NO ACTION

A focused sampling approach at DOE/RL and EPA agreed upon locations was conducted on September 8, 16, and 29, 2004 to evaluate the soil surrounding the lead-sheathed telecommunications cable. The results of this sampling effort support a reclassification decision of 600-235, Lead-Sheathed Telephone Cable, to no action in accordance with the waste site reclassification guideline TPA-MP-14 process (DOE-RL 1998b). The sampling results show that the buried lead-sheathed cable does not present a risk to human health or the environment relative to cleanup levels and that current site conditions are consistent with remedial action objectives and the corresponding RAGs for remedial action in the Hanford Site 100 Area (DOE-RL 2004). The concentrations of metals detected in the soil associated with the lead-sheathed cable are also below or consistent with Hanford Site background and upstream Columbia River levels. A notation will be included in the WIDS entry that the cable contains lead and will require management as a dangerous waste if removed at a future date as part of excavation or construction activities.

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APPENDIX A

**WASTE INFORMATION DATA SYSTEM
GENERAL SUMMARY REPORT
(3 Pages)**

Waste Information Data System

01/12/2005

General Summary Report

Site Names: 600-235, Lead Sheathed Telephone Cables
Site Type: Dumping Area
Status: Inactive
Operable Unit: NONE
Hanford Area: 600

Start Date: 1943
End Date:
Coordinates:
 (E) 0.000
 (N) 0.000
 Washington State Plane

Site

This site includes inactive lead-sheathed telephone cable that was abandoned as part of the Integrated Voice Data Telephone System (IVDTS), which was installed in 1988 by U. S. West. This system installed new telephone equipment in most buildings and installed new telephone switching facilities. In some cases the IVDTS reused portions of the old cables, but in most cases the old cable was abandoned in place.

Description:**Location**

The buried cables are located throughout the Hanford site.

Description:**Process**

Beginning in the 1940's, the US Army began installing communication systems across the Hanford project property. The switching centers were originally tied together with lead sheathed cables. As communication systems have evolved over the years, many of the old switching centers were removed. In some cases, the old lines were reused, but in many cases the lead sheathed cables were abandoned in place.

Lead-sheathed aerial cable lines ran from the 702-Central Telephone Exchange Building at Richland to switchboards housed in the 1720 Patrol Headquarters in the 100 B, D and F Areas and to the 704 Supervisor's Office Buildings in the 200 East and West Areas, and Building 3706 in the 300 Area, with interconnecting trunk lines between the 100 and 200 Process Areas. Details of the cable sizes have been documented in previous reports. No information has been located indicating underground telephone cables on the North Slope.

Description:**Site**

Prior to the 1960's, the standard telephone cable used on the Hanford site was lead sheathed, paper wrapped cable. This type of cable was used until polyethylene sheathed, plastic insulated cables were developed. The lead cables were removed or replaced with newer cabling as the need required. Much of the buried cable was abandoned in place because at the time it was replaced it was not considered to be a potential environmental hazard.

In 1992, the Environmental Protection Agency (EPA) had determined that lead cables were to be classified as solid waste. According to the EPA, those lead cables still in use should be included as part of the Estimated Lead Inventory which must be kept current. In 1992, Westinghouse Hanford (Robinson 1992) determined that once the lead cable had no identifiable future use, it was to be moved to an Excess Lead Inventory list and disposed of (removed) within 180 days. However, cable abandoned prior to 1980, was not subject to these removal actions unless the material was dug up.

In April 1996, the NEPA [National Environmental Policy Act] Services group at Westinghouse Hanford Company determined that the lead-sheathed telephone cables could be removed and recycled under an existing categorical exclusion for telecommunications activities at the Hanford Site. It was determined that further NEPA review by the Department of Energy was not required. Cables that are radiologically contaminated are not covered under this categorical exclusion.

A 2001 re-evaluation of the situation and more recent EPA Headquarters correspondence related to similar material shows that EPA determined that lead shot from weapons firing does not meet the regulatory definition of a RCRA solid waste because there is no element of discard involved: shooting of bullets is within the normal and expected use pattern of the product. (See EPA 1997)

The situation for lead-sheathed telephone cable is similar in that the in-use pattern typically involves burying the cable in the ground, where it would remain when the cable is taken out of service. Based on this interpretation, the lead-sheathed cable is not a solid waste under RCRA regulations.

Additional background information has been presented in a 2003 report on the lead-sheathed phone cable system that was used on the Hanford Site.

Comment:**References:**

1. Gary S. Robinson, 4-17-92 Lead Lined Cable, 81150-92-036.
2. R.H. Engelmann, 4-19-96 Categorically Excluded Telecommunications Activities: Removal of Telecommunications Cable, Hanford Site, Richland, Wa., 01880-96-023.
3. FR Buck, 5-20-92 Cable Removal Procedure.
4. FR Buck, 8-21-97 To Jeff Shearer: Additional Lead Questions.
5. Diana Martinez via Curt Clement, 9/21/00 New File for the Abandoned Lead.
6. Jeffery S. Hannapel, Washington D.C. EPA Office of Solid Waste, 3/17/97 Re: Regulatory Status of Lead Shot, letter from Jeffery S. Hannapel (EPA Office of Solid Waste) to Duncan Campbell (EPA Region V RCRA Enforcement).
7. Jim Sharpe, 5/14/03 Lead-Sheathed Telephone Cable at the Hanford Site.

Waste Information:**Type:** Equipment**Physical State:** Solid**Description:** The lead in the cable is considered hazardous but not the cable itself.**References:**

1. Gary S. Robinson, 4-17-92 Lead Lined Cable, 81150-92-036.
2. T. E. Logan, 9/7/01 Reclassification of Lead-Sheathed Telephone Cable, WIDS Waste Site 600-235, CCN 092175.

Dimensions:**Comments:** There was more than 200 miles of lead sheathed cable installed at the Hanford Site.**References:**

1. FR Buck, 5-20-92 Cable Removal Procedure.

Regulatory Information:

DOE Program:	Programmatic Responsibility	
DOE Division:	Confirmed By Program:	11g
Responsible	OSS - Office of Site Services	

Contractor/Subcontractor:**Site Evaluation****Solid Waste Management Unit:** No**TPA Waste Management Unit Type:** Waste Disposal Unit**This site was consolidated with:****Reason:****The Following Site(s) Were Consolidated With This Site:****Site Names:****Reason:****Permitting****RCRA Part B Permit:** No**TSD Number:****RCRA Part A Permit:** No**Closure Plan:**

No

RCRA PermitStatus:

Septic Permit:
Inert LandFill: No

216/218 Permit: No
NPDES:
State Waste
Discharge Permit:

Air Operating Permit: No
Air Operating Permit

Number(s): No

Tri-Party Agreement

Lead Regulatory Agency: EPA
Unit Category: CERCLA Past Practice (CPP)
TPA Appendix: 0

Remediation and Closure

Decision Document: No

Decision Document

Status:

Remediation Design: Yes

Group:

Closure Document: 0

Closure Type: No

Post Closure

Requirements:

ResidualWaste:

Images:

Pathname: \\apwids01\widsimg\600\4202\4202_01.JPG

DateTaken: 04/29/2003

Description: This photo shows a section of a telecommunication cable, which consisted of paper insulated copper wire in a lead sheathed cable.

Pathname: \\apwids01\widsimg\600\4202\4202_02.JPG

DateTaken: 04/29/2003

Description: This photo shows a cross-section of the lead-sheathed cable.

Pathname: \\apwids01\widsimg\600\4202\4202_03.JPG

DateTaken: 04/29/2003

Description: This photo shows a cross-section of the lead-sheathed cable.

Pathname: \\apwids01\widsimg\600\4202\4202_04.JPG

DateTaken: 04/29/2003

Description: This photo shows a section of a telecommunications cable. The original cable consisted of paper insulated copper wires in a lead-sheathed cable.

APPENDIX B

Field Investigation Photographs (8 Pages)

Figure B-1. Telecommunications Cable.

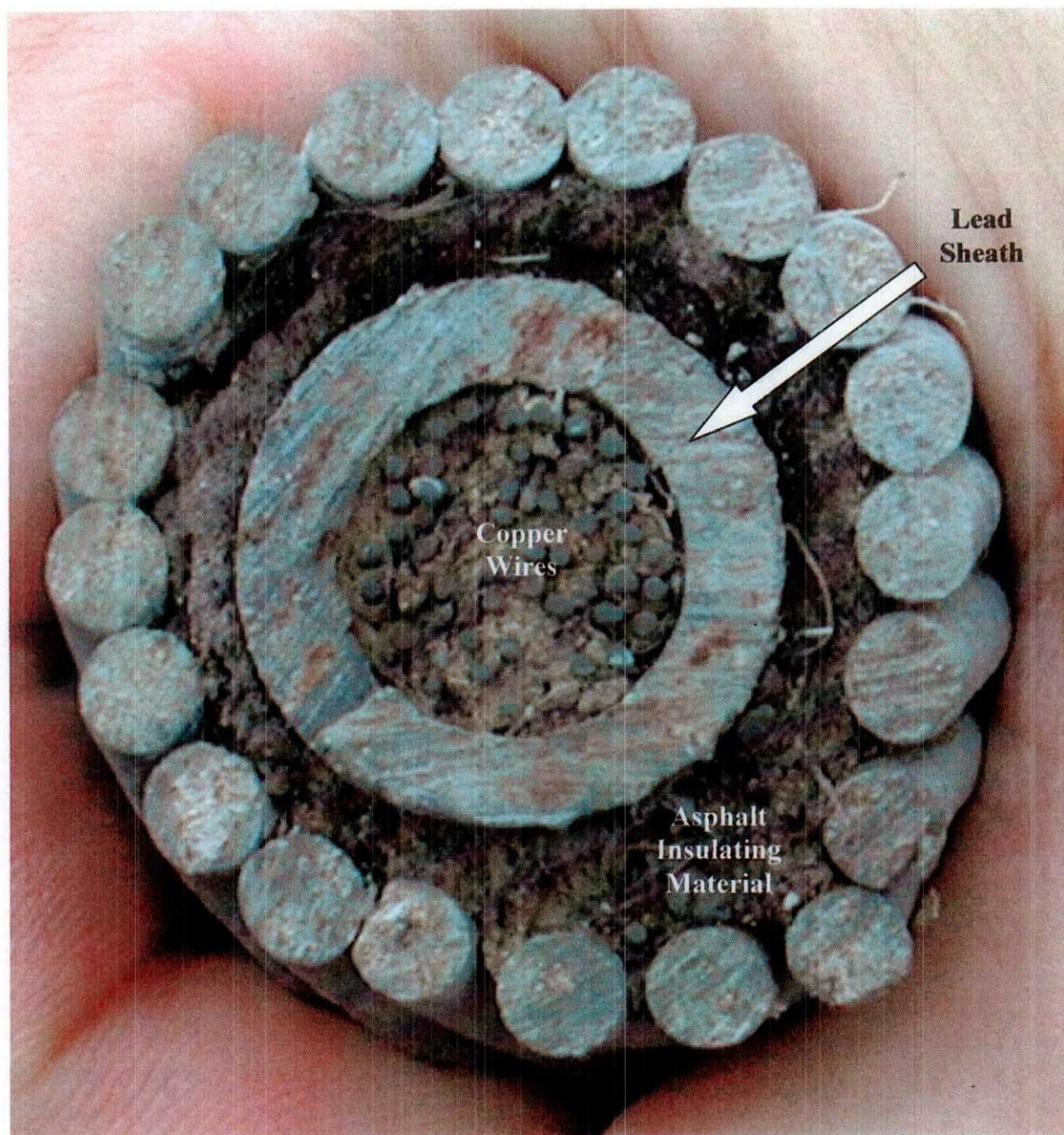


Figure B-2. Telecommunications Cable with Lead Sheath, Twine/Asphalt-Coated Insulation, and Outer Metal Wire Wrap.



Figure B-3. Telecommunications Cable.



Figure B-4. Telecommunications Cable with Eroded Asphalt Coating and Exposed Underlying Twine/Rope Wrap.



**Figure B-5. Telecommunications Cable in its Least-Eroded Condition,
with Paper Wrapping.**



Figure B-6. Telecommunications Cable with Metal Banding.



Figure B-7. Concrete Block Building on Columbia River South Shore.

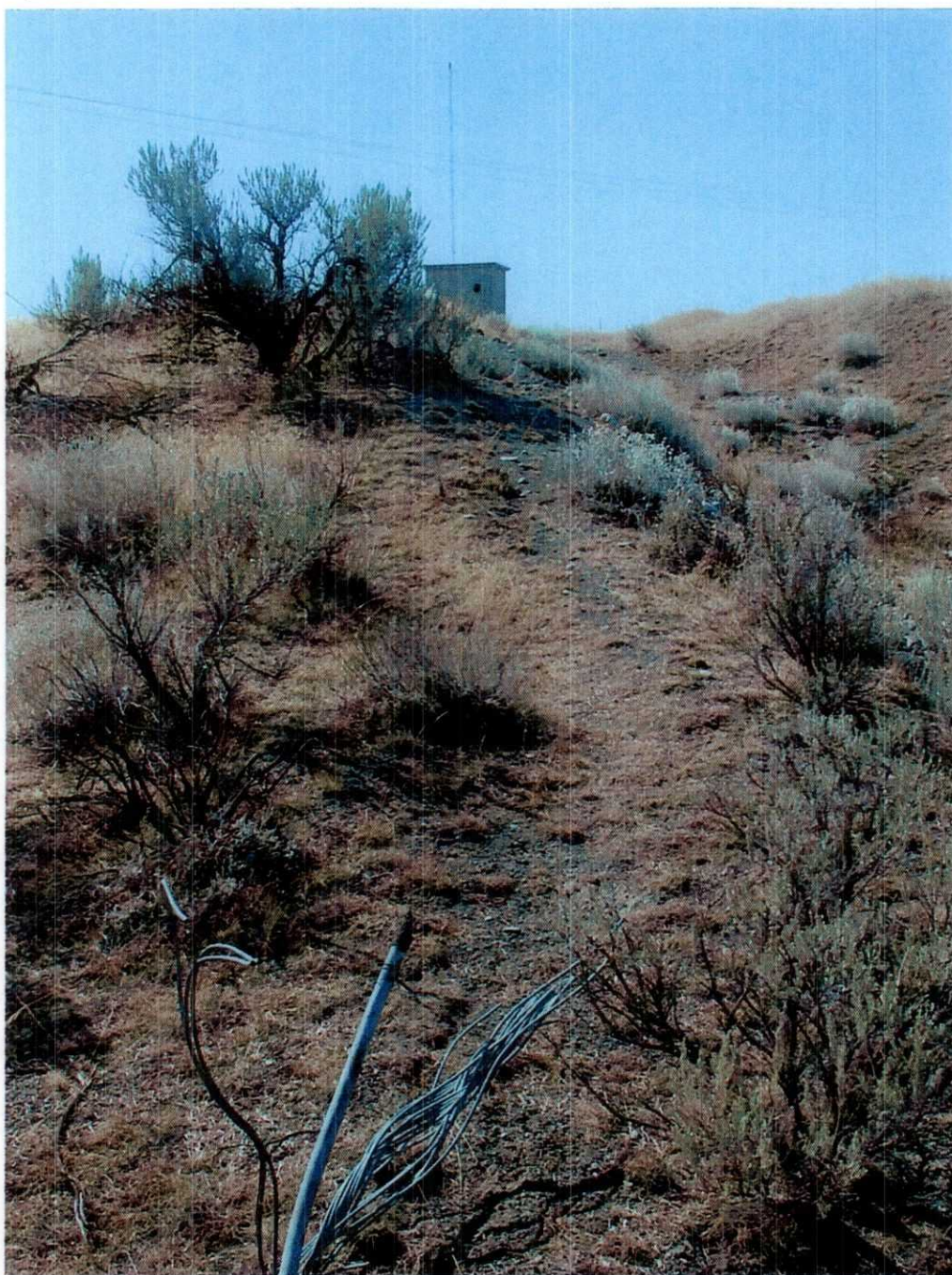


Figure B-8. Concrete Block Building on Columbia River North Shore.



APPENDIX C

600-235 DATA SUMMARY TABLES (6 Pages)

Table C-1. Inorganic Sample Results.

Sample Location	Sample Depth	HEIS Number	Sample Date	Arsenic			Barium			Cadmium			Chromium			Lead			Mercury			Selenium			Silver		
				mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
100-D Bluff	0-6 in.	J01T71	9/8/04	2.1		0.35	66.2		0.02	0.03	U	0.03	4	C	0.06	3		0.18	0.01	U	0.01	0.38	U	0.38	0.09	U	0.09
Equipment Blank	N/A	J01T78	9/8/04	0.31		0.25	1.5		0.01	0.02	U	0.02	0.16	CJ	0.04	0.28		0.13	0.02	U	0.02	0.27	U	0.27	0.06	U	0.06
100-D Bluff (duplicate)	0-6 in.	J01T77	9/8/04	2.6		0.33	66.3		0.02	0.03	U	0.03	5.3	C	0.06	2.9		0.17	0.02	U	0.02	0.36	U	0.36	0.27		0.08
100-D Bluff	6-12 in.	J01T72	9/8/04	2		0.3	56.6		0.02	0.03	U	0.03	4	C	0.05	2.4		0.16	0.01	U	0.01	0.33	U	0.33	0.08	U	0.08
North Slope Floodplain	0-6 in.	J01T79	9/16/04	6.9		1.1	73.6		2	0.83		0.09	22		0.18	34.2		0.58	0.02	U	0.02	1.2	U	1.2	0.27	U	0.27
North Slope Floodplain	6-8 in.	J01T80	9/16/04	7		1.1	84.3		2	0.3		0.09	46.6		0.19	15		0.59	0.02	U	0.02	1.2	U	1.2	0.28	U	0.28
North Slope Bluff	0-6 in.	J01T81	9/16/04	3.8		1.1	60.2		1.9	0.09	U	0.09	10.5		0.18	3.8		0.56	0.01	U	0.01	1.1	U	1.1	0.26	U	0.26
North Slope Bluff	6-12 in.	J01T82	9/16/04	2.7		1.1	66		2	0.48		0.09	11.4		0.18	3.3		0.56	0.02	U	0.02	1.2	U	1.2	0.27	U	0.27
200 East	0-6 in.	J01T75	9/29/04	2.8		0.35	88.3	CJ	0.02	0.03	U	0.03	7.6		0.06	3.3		0.19	0.02	U	0.02	0.38	U	0.38	0.09	U	0.09
200 East	6-12 in.	J01T76	9/29/04	2.9		0.36	91.6	CJ	0.02	0.03	U	0.03	9.1		0.06	3.5		0.19	0.02	U	0.02	0.38	U	0.38	0.09	U	0.09
100-D Riparian	0-6 in.	J01T83	9/29/04	1.7		0.37	65.2	CJ	0.02	0.2		0.03	6.4		0.06	6.4		0.2	0.02	U	0.02	0.4	U	0.4	0.09	U	0.09
100-D Riparian	6-12 in.	J01T84	9/29/04	2.8		0.35	63.9	CJ	0.02	0.42		0.03	6.7		0.06	19.6		0.18	0.02	U	0.02	0.38	U	0.38	0.09	U	0.09
100-N	0-6 in.	J01T73	9/29/04	3.4		0.35	56.8	CJ	0.02	0.03	U	0.03	15		0.06	4		0.19	0.01	U	0.01	0.38	U	0.38	0.09	U	0.09
100-N	6-12 in.	J01T74	9/29/04	3.3		0.34	57.4	CJ	0.02	0.03	U	0.03	14.1		0.06	4.1		0.18	0.01	U	0.01	0.37	U	0.37	0.09	U	0.09
200 East Asphalt	N/A	J01MH4	7/8/04	2.3		2.1	37.8		0.18	0.24	U	0.24	17.5		0.71	10.3		1.8	0.17		0.02	2.1	U	2.1	0.48	U	0.48
100-D Bluff Asphalt	N/A	J01MH5	7/8/04	1.9		0.34	7.5		0.03	0.15		0.04	1.6		0.12	1060		0.3	0.02	U	0.02	0.64		0.35	0.08	U	0.08

Note: Data qualified with C, and/or J, are considered acceptable values.

C = blank contamination (inorganic constituents)

N/A = not applicable

J = estimated

PQL = practical quantification limit

Q = qualifier

U = undetected

Table C-2. Asbestos Sample Results.

Sample Location	Sample Media	HEIS Number	Asbestos Result
100-D Bluff	Copper wire paper insulation	J01MH9	None detected
100-D Bluff	Asphalt	J01MH6	None detected
200 East	Asphalt	J01MH7	None detected

HEIS = Hanford Environmental Information System

**Table C-3. Organic Results for Asphalt Samples and Copper Wire Insulating Material.
(3 Pages)**

Constituent	J01MH4 Asphalt at 100-D Bluff Sample Date 07/08/04			J01MH5 Asphalt at 200 East Sample Date 07/08/04			J01MH8 Copper Wire Insulation Sample Date 07/08/04		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
PCBs (Polychlorinated Biphenyls)									
Aroclor-1016	210	U	210	210	U	210	170	U	170
Aroclor-1221	210	U	210	210	U	210	170	U	170
Aroclor-1232	210	U	210	210	U	210	170	U	170
Aroclor-1242	210	U	210	210	U	210	170	U	170
Aroclor-1248	210	U	210	210	U	210	170	U	170
Aroclor-1254	210	U	210	210	U	210	170	U	170
Aroclor-1260	210	U	210	210	U	210	170	U	170
Semi-Volatile Organic Analytes									
1,2,4-Trichlorobenzene	69000	UD	69000	690000	UD	690000			
1,2-Dichlorobenzene	69000	UD	69000	690000	UD	690000			
1,3-Dichlorobenzene	69000	UD	69000	690000	UD	690000			
1,4-Dichlorobenzene	69000	UD	69000	690000	UD	690000			
2,4,5-Trichlorophenol	170000	UD	170000	1700000	UD	1700000			
2,4,6-Trichlorophenol	69000	UD	69000	690000	UD	690000			
2,4-Dichlorophenol	69000	UD	69000	690000	UD	690000			
2,4-Dimethylphenol	69000	UD	69000	690000	UD	690000			
2,4-Dinitrophenol	170000	UD	170000	1700000	UD	1700000			
2,4-Dinitrotoluene	69000	UD	69000	690000	UD	690000			
2,6-Dinitrotoluene	69000	UD	69000	690000	UD	690000			
2-Chloronaphthalene	69000	UD	69000	690000	UD	690000			
2-Chlorophenol	69000	UD	69000	690000	UD	690000			
2-Methylnaphthalene	69000	UD	69000	690000	UD	690000			
2-Methylphenol (cresol, o-)	69000	UD	69000	690000	UD	690000			
2-Nitroaniline	170000	UD	170000	1700000	UD	1700000			
2-Nitrophenol	69000	UD	69000	690000	UD	690000			
3+4 Methylphenol (cresol, m+p)	69000	UD	69000	690000	UD	690000			

Table C-3. Organic Results for Asphalt Samples and Copper Wire Insulating Material.
(3 Pages)

Constituent	J01MH4 Asphalt at 100-D Bluff Sample Date 07/08/04			J01MH5 Asphalt at 200 East Sample Date 07/08/04		
	µg/kg	Q	PQL	µg/kg	Q	PQL
3,3'-Dichlorobenzidine	69000	UD	69000	690000	UD	690000
3-Nitroaniline	170000	UD	170000	1700000	UD	1700000
4,6-Dinitro-2-methylphenol	170000	UD	170000	1700000	UD	1700000
4-Bromophenylphenyl ether	69000	UD	69000	690000	UD	690000
4-Chloro-3-methylphenol	69000	UD	69000	690000	UD	690000
4-Chloroaniline	69000	UD	69000	690000	UD	690000
4-Chlorophenylphenyl ether	69000	UD	69000	690000	UD	690000
4-Nitroaniline	170000	UD	170000	1700000	UD	1700000
4-Nitrophenol	170000	UD	170000	1700000	UD	1700000
Acenaphthene	69000	UD	69000	690000	UD	690000
Acenaphthylene	69000	UD	69000	690000	UD	690000
Anthracene	69000	UD	69000	73000	JD	690000
Benzo(a)anthracene	69000	UD	69000	560000	JD	690000
Benzo(a)pyrene	69000	UD	69000	210000	JD	690000
Benzo(b)fluoranthene	4100	JD	69000	260000	JD	690000
Benzo(ghi)perylene	3500	JD	69000	110000	JD	690000
Benzo(k)fluoranthene	69000	UD	69000	300000	JD	690000
Bis(2-chloro-1-methylethyl)ether	69000	UD	69000	690000	UD	690000
Bis(2-Chloroethoxy)methane	69000	UD	69000	690000	UD	690000
Bis(2-chloroethyl) ether	69000	UD	69000	690000	UD	690000
Bis(2-ethylhexyl) phthalate	69000	UD	69000	690000	UD	690000
Butylbenzylphthalate	69000	UD	69000	690000	UD	690000
Carbazole	69000	UD	69000	350000	JD	350000
Chrysene	7800	JD	69000	560000	JD	560000
Di-n-butylphthalate	69000	UD	69000	690000	UD	690000
Di-n-octylphthalate	69000	UD	69000	690000	UD	690000
Dibenz[a,h]anthracene	69000	UD	69000	40000	JD	690000
Dibenzofuran	69000	UD	69000	690000	UD	690000

**Table C-3. Organic Results for Asphalt Samples and Copper Wire Insulating Material.
(3 Pages)**

Constituent	J01MH4 Asphalt at 100-D Bluff Sample Date 07/08/04			J01MH5 Asphalt at 200 East Sample Date 07/08/04		
	µg/kg	Q	PQL	µg/kg	Q	PQL
Diethylphthalate	69000	UD	69000	690000	UD	690000
Dimethyl phthalate	69000	UD	69000	690000	UD	690000
Fluoranthene	4000	JD	69000	3000000	D	690000
Fluorene	69000	UD	69000	690000	UD	690000
Hexachlorobenzene	69000	UD	69000	690000	UD	690000
Hexachlorobutadiene	69000	UD	69000	690000	UD	690000
Hexachlorocyclopentadiene	69000	UD	69000	690000	UD	690000
Hexachloroethane	69000	UD	69000	690000	UD	690000
Indeno(1,2,3-cd)pyrene	69000	UD	69000	110000	JD	690000
Isophorone	69000	UD	69000	690000	UD	690000
N-Nitroso-di-n-dipropylamine	69000	UD	69000	690000	UD	690000
N-Nitrosodiphenylamine	69000	UD	69000	690000	UD	690000
Naphthalene	69000	UD	69000	690000	UD	690000
Nitrobenzene	69000	UD	69000	690000	UD	690000
Pentachlorophenol	170000	UD	170000	1700000	UD	1700000
Phenanthrene	69000	UD	69000	770000	D	690000
Phenol	69000	UD	69000	690000	UD	690000
Pyrene	6900	JD	69000	1800000	D	690000

Note: Data qualified with C, and /or J, are considered acceptable values.

D = dilution

J = estimated

PCB = polychlorinated biphenyl

PQL = practical quantification limit

Q = qualifier

U = undetected

Table C-4. Organic Data for Soil Samples. (3 Pages)

Constituent	100-D Bluff									200 East						Equipment Blank		
	J01T71 (0-6 in.) Sample Date 09/08/04			J01T72 (6-12 in.) Sample Date 09/08/04			J01T77 (0-6 in.) Sample Date 09/08/04			J01T75 (0-6 in.) Sample Date 9/29/04			J01T76 (6-12 in.) Sample Date 09/29/04			J01T78 Sample Date 09/08/04		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Aroclor-1016	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Aroclor-1221	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Aroclor-1232	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Aroclor-1242	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Aroclor-1248	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Aroclor-1254	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Aroclor-1260	14	UJ	14	14	UJ	14	14	UJ	14	14	U	14	14	U	14	13	UJ	13
Acenaphthene	102	U	102	102	U	102	102	U	102	103	UJ	103	104	UJ	104	100	U	100
Acenaphthylene	102	U	102	102	U	102	102	U	102	103	U	103	104	U	104	100	U	100
Anthracene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Benzo(a)anthracene	7.1		5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Benzo(a)pyrene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Benzo(b)fluoranthene	6.1		5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Benzo(ghi)perylene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Benzo(k)fluoranthene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Chrysene	5.6		5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Dibenz[a,h]anthracene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Fluoranthene	11	J	10.2	10.2	UJ	10.2	10.2	UJ	10	10.3	U	10.3	10.4	U	10.4	10	UJ	10
Fluorene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Indeno(1,2,3-cd)pyrene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Naphthalene	102	U	102	102	U	102	102	U	102	103	UJ	103	104	UJ	104	100	U	100
Phenanthrene	5.09	U	5.09	5.11	U	5.11	5.1	U	5.1	5.14	U	5.14	5.18	U	5.18	5	U	5
Pyrene	14	J	10.2	10.2	UJ	10.2	10.2	UJ	10	10.3	U	10.3	10.4	U	10.4	10	UJ	10

Table C-4. Organic Data for Soil Samples. (3 Pages)

Constituent	100-D Riparian						100-N					
	J01T83 (0-6 in.) Sample Date 09/29/04			J01T84 (6-12 in.) Sample Date 09/29/04			J01T73 (0-6 in.) Sample Date 09/29/04			J01T74 (6-12 in.) Sample Date 9/29/04		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Aroclor-1016	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1221	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1232	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1242	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1248	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1254	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1260	14	U	14	14	U	14	13	U	13	14	U	14
Acenaphthene	105	UJ	105	105	UJ	105	150	J	101	101	UJ	101
Acenaphthylene	105	U	105	105	U	105	101	U	101	101	U	101
Anthracene	5.24	U	5.24	5.25	U	5.25	5.05	U	5.05	5.07	U	5.07
Benzo(a)anthracene	5.24	U	5.24	5.25	U	5.25	4	J	5.05	5.07	U	5.07
Benzo(a)pyrene	5.24	U	5.24	5.25	U	5.25	34	J	5.05	7.6	J	5.07
Benzo(b)fluoranthene	7.3		5.24	4.2	J	5.25	63	J	5.05	25		5.07
Benzo(ghi)perylene	5.24	U	5.24	5.25	U	5.25	29	J	5.05	6.8	J	5.07
Benzo(k)fluoranthene	5.24	UJ	5.24	5.25	UJ	5.25	9	J	5.05	5.07	UJ	5.07
Chrysene	3.4	J	3.4	5.25	U	5.25	5.05	U	5.05	5.07	U	5.07
Dibenz[a,h]anthracene	5.24	U	5.24	5.25	U	5.25	2.5	J	5.05	5.07	U	5.07
Fluoranthene	10.5	U	10.5	8.4	J	8.4	49	J	10.2	9.9	J	10.1
Fluorene	5.24	U	5.24	3.4	J	3.4	3.8	J	5.05	5.07	U	5.07
Indeno(1,2,3-cd)pyrene	5.24	U	5.24	2.6	J	2.6	34	J	5.05	5.6	J	5.07
Naphthalene	105	UJ	105	105	UJ	105	101	UJ	101	101	UJ	101
Phenanthrene	2.6	J	2.6	2.6	J	2.6	5.05	U	5.05	5.07	U	5.07
Pyrene	10.5	U	10.5	10.5	U	10.5	11	J	10.2	10.1	U	10.1

Table C-4. Organic Data for Soil Samples. (3 Pages)

CONSTITUENT	North Slope Floodplain						North Slope Bluff					
	J01T79 (0-6 in.) Sample Date 09/16/04			J01T80 (6-8 in.) Sample Date 09/16/04			J01T81 (0-6 in.) Sample Date 09/16/04			J01T82 (6-12 in.) Sample Date 9/16/04		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Aroclor-1016	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1221	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1232	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1242	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1248	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1254	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1260	14	U	14	14	U	14	13	U	13	13	U	13
Acenaphthene	1200	J	1030	1040	UJ	1040	100	U	100	101	U	101
Acenaphthylene	1030	UJ	1030	1040	UJ	1040	100	U	100	101	U	101
Anthracene	51.3	UJ	51.3	52.2	UJ	52.2	2.5	J	5.02	5.04	U	5.04
Benzo(a)anthracene	790	J	51.3	40	J	52.2	16	J	5.02	5.04	U	5.04
Benzo(a)pyrene	1700	J	51.3	78	J	52.2	11	J	5.02	5.04	U	5.04
Benzo(b)fluoranthene	6800	J	51.3	360	J	52.2	28	J	5.02	5.04	U	5.04
Benzo(ghi)perylene	1700	J	51.3	110	J	52.2	12	J	5.02	5.04	U	5.04
Benzo(k)fluoranthene	1600	J	51.3	84	J	52.2	6	J	5.02	5.04	U	5.04
Chrysene	2000	J	51.3	120	J	52.2	25	J	5.02	5.04	U	5.04
Dibenz[a,h]anthracene	240	J	51.3	52.2	UJ	52.2	5.02	U	5.02	5.04	U	5.04
Fluoranthene	3500	J	101	370	J	104	120	J	10	10.1	U	10.1
Fluorene	620	J	51.3	44	J	52.2	5.02	U	5.02	5.04	U	5.04
Indeno(1,2,3-cd)pyrene	2100	J	51.3	130	J	52.2	8.5	J	5.02	5.04	U	5.04
Naphthalene	1030	UJ	1030	1040	UJ	1040	100	U	100	101	U	101
Phenanthrene	200	J	51.3	52.2	UJ	52.2	8.3	J	5.02	3.8	J	5.04
Pyrene	1900	J	101	99	J	104	65	J	10	10.1	U	10.1